

# Incidence of Complications of Unsafe Chronic Suppurative Otitis Media Presenting in a Tertiary Care Hospital at Assam, India- A Retrospective Study

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## ABSTRACT

**Introduction:** Chronic otitis media is inflammation of the middle ear cleft presenting with recurrent ear discharge through a tympanic membrane perforation. The disease spectrum ranges from mild to severe forms of complications. Complications of chronic otitis media can be extracranial or intracranial.

**Aim:** To evaluate the demographic profile of patients with chronic otitis media and to estimate the incidence of complications in upper Assam province during a period of five years.

**Materials and Methods:** This retrospective study was carried out on a total of 260 patients of chronic otitis media admitted in Ear, Nose and Throat Department, Assam Medical College and Hospital, Dibrugarh, Assam, India, during a period of five years

from August 2016 to July 2021. The data collected were tabulated in Microsoft Excel Worksheet. The categorical variables were summarised as proportions and percentages.

**Results:** From the records, majority (31.2%) of the cases were found in the age group of 11-20 years with a male to female ratio of 1.13. The disease was more common during the winter season (56.5%). A 13.5% cases showed complications of chronic otitis media. Mastoiditis was the most common extracranial complication (31.4%), followed by periosteal abscesses (22.9%), facial nerve paralysis (11.4%) and labyrinthitis (5.7%).

**Conclusion:** The early identification of symptoms by rural healthcare personnels and immediate management of unsafe chronic otitis media, to avoid complications.

**Keywords:** Facial nerve palsy, Intracranial and extracranial complications, Mastoid abscess, Meningitis

## INTRODUCTION

Chronic otitis media is inflammation of the middle ear cleft presenting with recurrent ear discharge through a tympanic membrane perforation. Due to acute otitis media or as a sequelae of eustachian tube dysfunction and retraction pocket formation, the pathogenesis may begin in childhood as a spontaneous tympanic membrane perforation [1]. The disease spectrum ranges from mild to severe forms, which include death from intracranial complications and is more common in lower socio-economic strata, poor hygiene and overcrowding communities [2]. Complications are due to progressive erosion of bone, increasing the risk of facial nerve, labyrinth and dural damage [3]. Apart from bony erosion, pathogenesis also includes thrombophlebitis of veins, preformed pathways and haematogenous spread [4]. A significant decrease in the number of patients with suppurative complications of otitis media is seen with the advent of the antibiotic era [2]. However, still many patients cannot afford treatment due to economic constraints.

Complications of chronic otitis media are classified as extracranial or intracranial. Extracranial complications are periosteal abscesses, petrositis, labyrinthitis and facial nerve paralysis, whereas intracranial complications include extradural, epidural, subdural and brain abscess, lateral sinus thrombophlebitis, meningitis and otitic hydrocephalus. The aim of the study was to record the demographic profile of patients with chronic suppurative otitis media and to estimate the prevalence of complications associated with it.

## MATERIALS AND METHODS

This retrospective study was conducted on a total of 260 patients of chronic otitis media admitted in Ear, Nose and Throat Department, Assam Medical College and Hospital, Dibrugarh, Assam, India, during a period of five years from August 2016 to July 2021 and were identified by searching a hospital database. Authors also

retrospectively reviewed the operation theatre log books. The data was analysed during a period of August 2021 to September 2021.

**Inclusion and Exclusion criteria:** All patients with chronic otitis media were included in the study and those with complications of acute suppurative otitis media with or without complications were excluded from the study.

**Data collection:** Medical records were analysed including demographic data (age, gender), seasons wise distribution, laterality of disease, types of CSOM, further occurrence of intracranial and extra cranial were noted.

## STATISTICAL ANALYSIS

The data collected were tabulated in Microsoft Excel Worksheet. The categorical variables were summarised as proportions and percentages.

## RESULTS

There was a total of 260 patients of chronic otitis media, squamousal or mucosal type, with or without complications during this study period. The number of cases was slightly higher in males with 138 cases (53%) in comparison to females which were 122 cases (47%). The male to female ratio was 1.13. Most of the cases were found in the age group of 11-20 years (31.2%). With respect to seasonal variability, the occurrence of chronic otitis media was more in winter (56.5%) than in summer (43.5%) [Table/Fig-1,2].

Total 82.7% patients had unilateral disease, while only 17.3% patients had bilateral disease. During the study period, 45% patients were diagnosed with mucosal Chronic Suppurative Otitis Media (CSOM) and 41.5% patients were diagnosed with squamousal CSOM without any complication, while 13.5% patients presented with complications [Table/Fig-3,4].

Age group (years)	Male	Female	Number of patients	Percentage (%)
1-10	7	2	9	3.5
11-20	47	34	81	31.2
21-30	40	39	79	30.4
31-40	22	23	45	17.3
41-50	13	11	24	9.2
51-60	5	6	11	4.2
>60	4	7	11	4.2
Total	138	122	260	100

[Table/Fig-1]: Age and sex distribution.

Season	Number of patients	Percentage (%)
Summer/Rainy	113	43.5
Winter	147	56.5
Total	260	100

[Table/Fig-2]: Season-wise distribution.

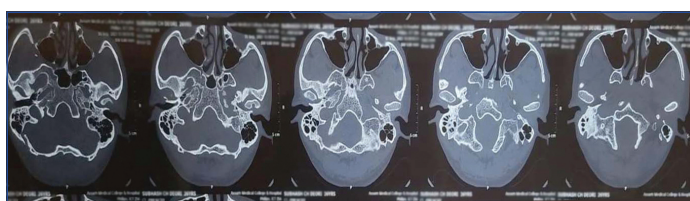
Sides	Number of patients	Percentage (%)
Unilateral	215	82.7
Bilateral	45	17.3
Total	260	100

[Table/Fig-3]: Involvement of sides.

Type of chronic suppurative otitis media	Number of patients	Percentage (%)
Mucosal type of CSOM	117	45
Squamosal CSOM w/o complications	108	41.5
Squamosal CSOM with complications	35	13.5
Total	260	100

[Table/Fig-4]: Types of Chronic Suppurative Otitis Media (CSOM).

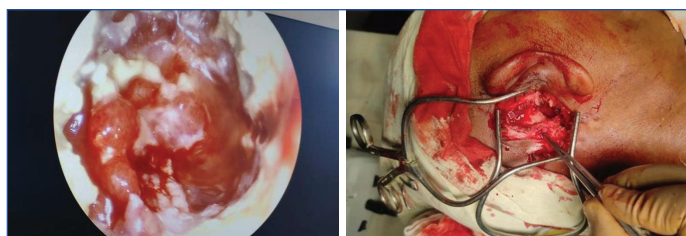
Mastoiditis was the most common extracranial complication (31.4%) in our series, followed by periosteal abscesses (22.9%), facial nerve paralysis (11.4%) and labyrinthitis (5.7%). The most common intracranial complication was cerebellar abscess (8.6%), followed by subdural abscess (5.7%), meningitis (5.7%), otitic hydrocephalus (5.7%) and lateral sinus thrombophlebitis (2.9%) [Table/Fig-5-9].



[Table/Fig-5]: CT temporomastoid showing right sided unsafe CSOM: (a) Axial cuts; (b) Coronal cuts.

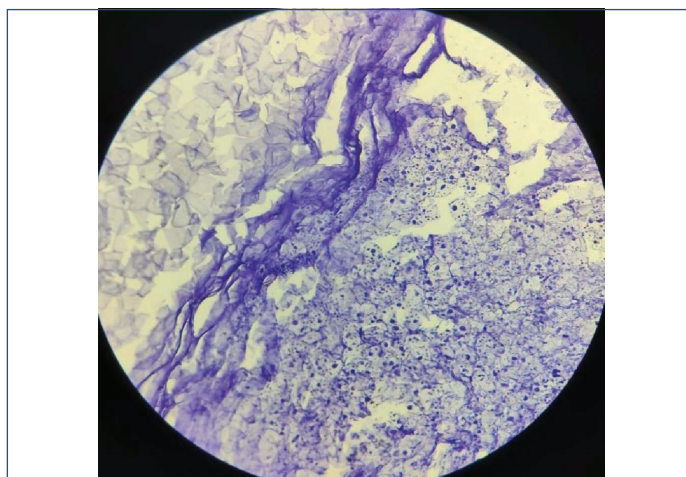
Complications	Number of patients	Percentage (%)
<b>Extracranial</b>		
Mastoiditis	11	31.4
Periosteal abscesses	8	22.9
Facial nerve paralysis	4	11.4
Labyrinthitis	2	5.7
<b>Intracranial</b>		
Cerebellar abscess	3	8.6
Subdural abscess	2	5.7
Meningitis	2	5.7
Otitic hydrocephalus	2	5.7
Lateral sinus thrombophlebitis	1	2.9
Total	35	100

[Table/Fig-6]: Occurrences of Extracranial (EC) and Intracranial (IC) complications.



[Table/Fig-7]: Shows an endoscopic image of middle ear cavity filled with cholesteatoma.

[Table/Fig-8]: Erosion of mastoid bone was noted with collection of pus opening into postauricular region, forming a sinus. (Images from left to right)



[Table/Fig-9]: One staining the cholesteatoma flakes with H&E, we have confirmed it to be an inflammatory lesion and not malignancy.

## DISCUSSION

Chronic otitis media is still prevalent among a large section of the population in spite of the advent of the antibiotic era. Negligence and lack of awareness are the major causes along with economic constraints.

The study was taken up to evaluate the variables like, age, gender, seasonal variation and the prevalence of complications. During this five year study, a total of 260 cases were included. The observations and results of the present study were analysed, evaluated and compared with observations made by various other studies on chronic otitis media.

In the present study, the most common age group of occurrence of CSOM with or without complications was 11-20 years, which shows a small variance with a study conducted by Basak B et al., where the most common age group was 21-30 years [1]. However, another study by Islam MS et al., found the most common age group was from 0-10 years, followed by 11-20 years [5]. Most of the studies reviewed shows a male predominance similar to the present study finding [1,6]. The disease is more prevalent during the winters according to a study conducted by Kumari MS et al., which is in accordance to our study [6]. Majority of our patients had unilateral disease which is also similar to a study conducted by Kumari MS et al., [6].

The most common extracranial complication in the present study was mastoiditis and periosteal abscesses, which is similar to studies conducted by Sharma N et al., [3]. Brain abscess was found to be the most common intracranial complication in the studies conducted by Sharma N et al., which is as per the present study [3]. Gupta MK and Gupta R also found in their study that mastoid abscess and brain abscess were the most common extracranial and intracranial complications of chronic otitis media [7]. A study conducted by Parmar BD et al., concluded that even in the modern antimicrobial era, the prevalence of life threatening complications of chronic otitis media in developing countries is due to lack of awareness regarding symptoms of ear discharge and progressive hearing loss. Delay in the diagnosis may be the result of inappropriate use of

antibiotics which can mask the presenting symptoms [8]. Coleman A and Cervin A in their article stated that breastmilk has conferred protection against acute otitis media in children under two years of age by manipulating commensal flora of the upper respiratory tract and gut as a probiotic and prebiotic [9].

### Limitation(s)

The study includes only those patients attending the Outpatient Department of Ear, Nose and Throat Department, but patients with only intracranial complications usually attend neurology or neurosurgery departments, where otological evaluation is usually not done on routine basis. So many of the patients with chronic otitis media may go undiagnosed.

### CONCLUSION(S)

The results of this study showed that majority of the population was from rural background. Ear discharge, mostly foul-smelling may be associated with unsafe CSOM, harbouring complications. Presence of headache, vertigo and earache may increase the risk of complications further. As intracranial once are associated with mortality and disabling morbidity, therefore, healthcare personnels, especially in rural service, should screen and investigate, or if needed, refer the cases early to avoid these complications.

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